This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (previously presented): A method for representing geographic features in a computer-based system, comprising:

providing a first computer-usable database storing a plurality of data points specifying latitude and longitude coordinates of locations along at least one geographic feature;

fitting a polynomial spline to the at least one geographic feature by applying a least squares approximation to the data points specifying latitude and longitude coordinates to generate a plurality of control points for the polynomial spline; and

storing the control points in a second computer-usable database, the control points being usable for representing the geometry of the at least one geographic feature in the computer-based system.

Claim 2 (original): The method of claim 1, wherein the data points are selected from the group consisting of coordinate pairs and coordinate triples.

Claim 3 (original): The method of claim 1, further comprising:

configuring the number of control points.

Claim 4 (original): The method of claim 1, wherein the polynomial spline is selected from the group consisting of uniform nonrational B-spline, non-uniform nonrational B-spline, uniform Catmull-Rom spline, nonuniform Catmull-Rom spline, and NURBS.

Claim 5 (original): The method of claim 1, further comprising:

defining a knot sequence for the polynomial spline.

Claim 6 (original): The method of claim 5, further comprising:

manually defining the knot sequence.

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Claim 7 (original): The method of claim 5, further comprising:

storing the knot sequence in the second computer-usable database.

Claim 8 (original): The method of claim 1, further comprising:

incorporating in the least squares approximation a bearing value associated with a node included in the plurality of data points.

Claim 9 (original): The method of claim 1, further comprising:

weighting a node included in the plurality of data points in the least squares approximation.

Claim 10 (original): The method of claim 1, further comprising:

employing regularization in computing the least squares approximation.

Claim 11 (original): The method of claim 1, further comprising:

identifying a straight section of the at least one geographic feature; and

storing in the second computer-usable database the data points corresponding to the straight section.

Claim 12 (original): The method of claim 11, further comprising:

computing the control points only for one or more curved sections of the at least one geographic feature.

Claim 13 (original): The method of claim 11, further comprising:

computing the control points such that the tangent to the spline approximation of a curved section of the at least one geographic feature and the tangent to the straight section are equal at the point at which the curved and straight section meet.

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Claim 14 (previously presented): A method of displaying on a computer output device a function representing a geographic feature, comprising:

retrieving from a computer-usable database a plurality of spline control points associated with the geographic feature, the spline control points being derived, using a least squares approximation, from a plurality of data points specifying latitude and longitude coordinates of locations along the geographic feature;

calculating a polynomial spline using the spline control points to generate the function representing the geometry of the geographic feature; and

displaying the function on the computer output device.

Claim 15 (original): The method of claim 14, wherein the polynomial spline is selected from the group consisting of uniform nonrational B-spline, non-uniform nonrational B-spline, uniform Catmull-Rom spline, nonuniform Catmull-Rom spline, and NURBS.

Claim 16 (previously presented): A method of generating a computer-usable database that represents feature geometry using a plurality of spline control points associated with a plurality of geographic features, comprising:

providing a predetermined database that represents feature geometry using a plurality of data points specifying latitude and longitude coordinates of locations along the geographic features;

for each of the geographic features, retrieving a corresponding set of data points specifying latitude and longitude coordinates from the predetermined database;

fitting a polynomial spline to each of the geographic features by computing a plurality of control points yielding the least squares approximation to the corresponding set of data points specifying latitude and longitude coordinates; and

storing the plurality of spline control points in the computer-usable database.

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Claim 17 (original): The method of claim 16, further comprising:

identifying a straight section of a geographic feature based on the data points; and

storing in the computer-usable database the data points corresponding to the straight section of the geographic feature.

Claim 18 (original): The method of claim 17, further comprising:

computing the control points only for one or more curved sections of the geographic feature.

Claim 19 (original): The method of claim 17, further comprising:

computing the control points for a geographic feature that has a curved section and an adjoining straight section such that a bearing value at an endpoint of the curved section equals a corresponding bearing value at an endpoint of the straight section that meets the curved section.

Claim 20 (original): The method of claim 16, further comprising:

incorporating in the least squares approximation a bearing value associated with a node included in the plurality of data points.

Claim 21 (original): The method of claim 16, further comprising:

weighting a node included in the plurality of data points.

Claim 22 (original): The method of claim 16, further comprising:

employing regularization in the least squares approximation.

Claim 23 (previously presented): A system for displaying a function representing the geometry of a geographic feature, comprising:

a database storing one or more spline control points associated with the geographic feature, the spline control points being derived, using a least squares approximation, from a plurality of data points specifying latitude and longitude coordinates of locations along the geographic feature;

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a processor configured to compute a polynomial spline using the spline control points to generate the function representing the geometry of the geographic feature; and

a display device for displaying the polyline.

Claim 24 (original): The system of claim 23, wherein the spline control points are derived by incorporating in the least squares approximation a bearing value associated with a node included in the plurality of data points.

Claim 25 (original): The system of claim 23, wherein the spline control points are derived using the least squares approximation by weighting a node included in the plurality of data points.

Claim 26 (original): The system of claim 23, wherein the spline control points are derived by employing regularization in the least squares approximation.

Claim 27 (original): The system of claim 23, wherein the processor is configured to determine whether the geographic feature includes a straight section, and if so, linearly interpolate the data points representing the straight section.

Claim 28 (original): The system of claim 23, wherein the polynomial spline is selected from the group consisting of uniform nonrational B-spline, nonuniform nonrational B-spline, uniform Catmull-Rom spline, nonuniform Catmull-Rom spline and NURBS.

Claim 29 (previously presented): A system for generating a plurality of spline control points that represent feature geometry, comprising:

a first computer-usable database for storing a plurality of data points specifying latitude and longitude coordinates of locations along at least one geographic feature;

a processor configured to apply a least squares approximation to the data points specifying latitude and longitude coordinates to generate the plurality of control points for a polynomial spline; and

a second computer-usable database for storing the control points.

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Claim 30 (original): The system of claim 29, wherein the processor is configured to incorporate in the least squares approximation a bearing value associated with a node included in the plurality of data points.

Claim 31 (original): The system of claim 29, wherein the processor is configured to weight a node included in the plurality of data points in the least squares approximation.

Claim 32 (original): The system of claim 29, wherein the processor is configured to employ regularization in computing the least squares approximation.

Claim 33 (original): The system of claim 29, wherein the processor is configured to determine whether the at least one geographic feature has a substantially straight section, and if so, to store in the second computer-usable database the data points corresponding to the straight section.

Claim 34 (original): The system of claim 33, wherein the processor computes the control points only for one or more curved sections of the at least one geographic feature.

Claim 35 (original): The system of claim 29, wherein the polynomial spline is selected from the group consisting of a uniform nonrational B-spline, nonuniform nonrational B-spline uniform Catmull-Rom spline, nonuniform Catmull-Rom spline, and NURBS.

Claim 36 (previously presented): The method of claim 1, wherein the geographic feature is a road.

Claim 37 (previously presented): The method of claim 1, wherein the data points further specifying altitude.

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